Technology needs assessments under the UNFCCC process

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The Technology Transfer Framework

- To develop meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention by increasing and improving the transfer of and access to environmentally sound technologies (ESTs) and know-how, The framework for meaningful and effective actions to enhance the implementation of Article 4.5 of the Convention was established in COP 7 by Decision 4/CP.7.

- Five key themes and areas were identified:
  - Technology needs and needs assessments
  - Technology information
  - Enabling environments
  - Capacity-building
  - Mechanisms for technology transfer

Technology Needs Assessments – what are they?

- The technology transfer framework defines TNAs as a set of country-driven activities that identify and determine the mitigation and adaptation technology priorities of Parties, particularly developing country Parties;

- TNAs involve different stakeholders in a consultative process to identify the barriers to technology transfer and measures to address these barriers through sectoral analyses;

- TNAs present an opportunity to track an evolving need for new equipment, techniques, practical knowledge and skills necessary to mitigate GHG emissions and to reduce vulnerability of livelihoods to the adverse impacts of climate change;

- The purpose of TNAs is to assist in identifying and analysing priority technology needs, which can form the basis for a portfolio of EST projects and programmes which can facilitate the transfer of, and access to, the ESTs and know-how in the implementation of Article 4, paragraph 5, of the Convention.

Technology Needs Assessments – Progress

- Since COP 7, developing country Parties have been assessing their technology needs in the areas of climate change mitigation and adaptation through an analysis that takes account of their development plans and strategies;

- Through its interim financing for capacity-building in priority areas – enabling activities phase II (also known as "top-ups") – the Global Environment Facility (GEF) provided funding to 94 Parties not included in Annex I to the Convention (non-Annex I Parties) to enable them to conduct TNAs. Of these 94 Parties, 78 are being supported by UNDP and 14 by UNEP;

- In 3/CP.13, Annex I. the Secretariat has been requested in collaboration with UNDP, EGTT, UNEP, and CTI to update the handbook for conducting TNAs taking into account experience, lessons learned indicated in the Synthesis report on TNAs, cross referencing the work on innovative financing, and technologies for adaptation;

Second synthesis report on technology needs

- As requested by COP (Decision 3/CP.13, annex I, para 8 (c)) the secretariat prepared a Second synthesis report on technology needs identified by NAI Parties based on

  - the 69 TNAs available by 1 December 2008,

  - the technology needs identified by 39 NAI Parties in their NCs.

- The Second synthesis report is made available for consideration by the SBSTA at its thirtieth session (FCCC/SBSTA/2009/INF.1) and it includes following main findings:

  – Since the production of the first synthesis report the number of Parties completing TNAs has more than tripled;

  – The number of TNAs submitted to the secretariat provided a platform for a more comprehensive analysis;

  – The Second synthesis report provides a detailed information at the regional level on differences and opportunities for technology transfer;

Second synthesis report on technology needs
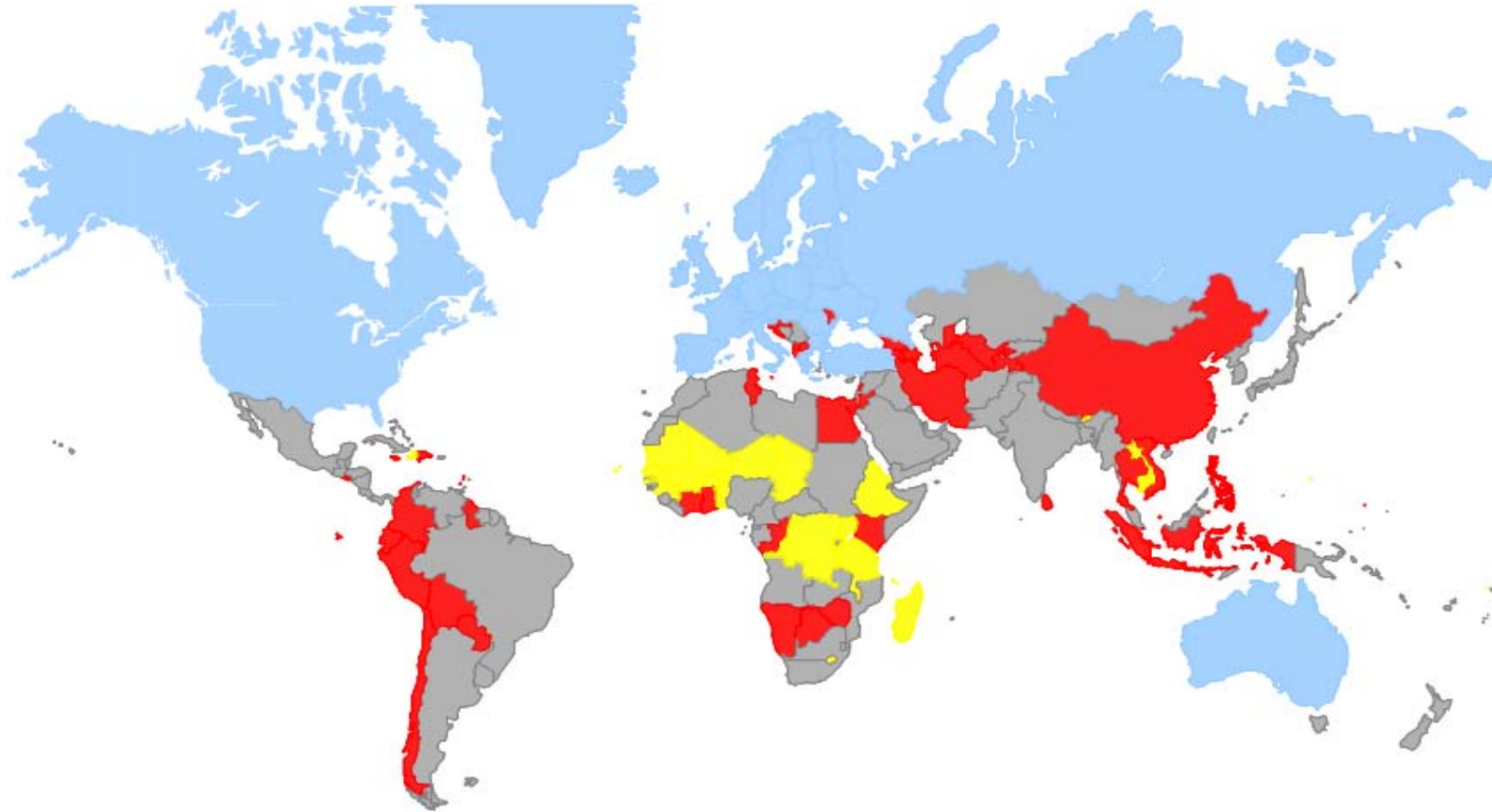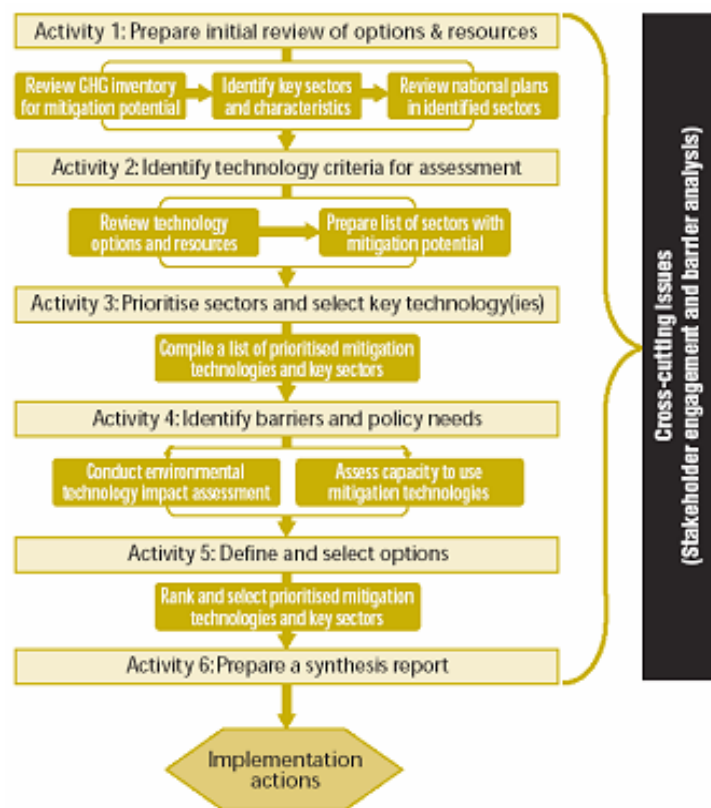

Parties that submitted TNA reports:

Developing Countries (DC), and Economies in Transition (EIT), **Least Developed Countries (LDC)**;

Technology Needs Assessments – Process

Main activities for conducting a TNA for mitigation technologies

Notes: Similar activities are carried out for a TNA of adaptation, but the tasks differ.
Source: July 2004 UNDP TNA for Climate Change Handbook

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Mitigation and adaptation related sectors

- Most commonly identified
  mitigation related sectors
  included energy generation,
  agriculture and forestry, and
  transport;

- Most commonly identified
  adaptation related sectors
  contained agriculture and
  forestry, water management,
  systematic observation and
  monitoring;

Targeted areas

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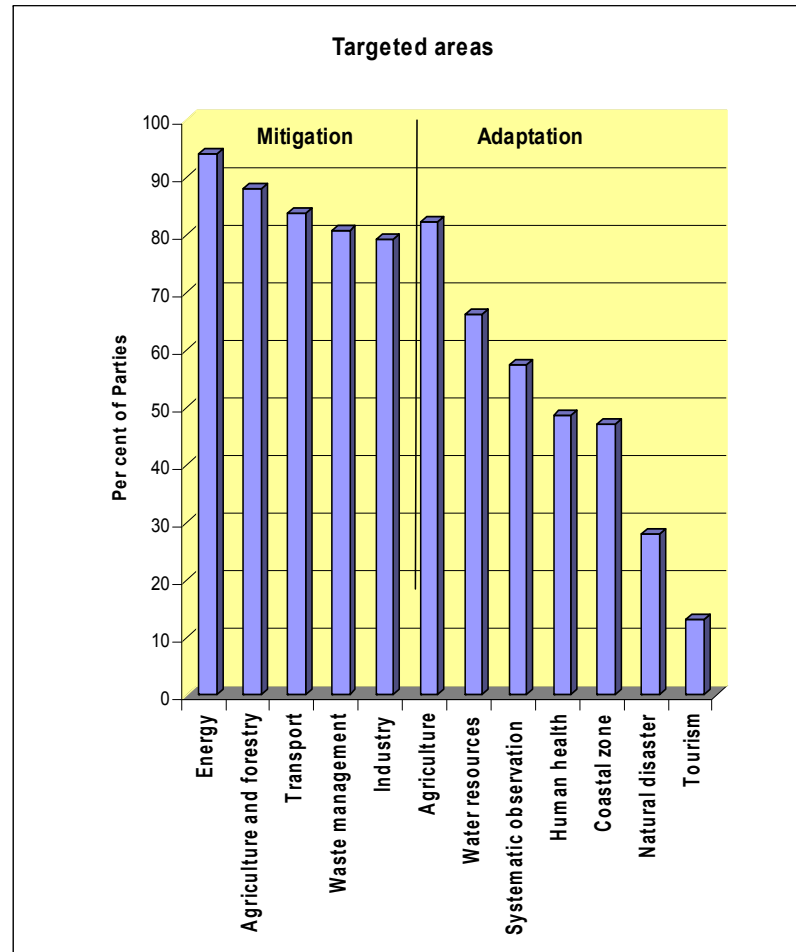
# Sectors and technologies commonly considered in relation to mitigation

Most commonly identified technology needs for mitigation were RET, energy efficient appliances, waste management technologies, forestry related technologies, and clean vehicles;
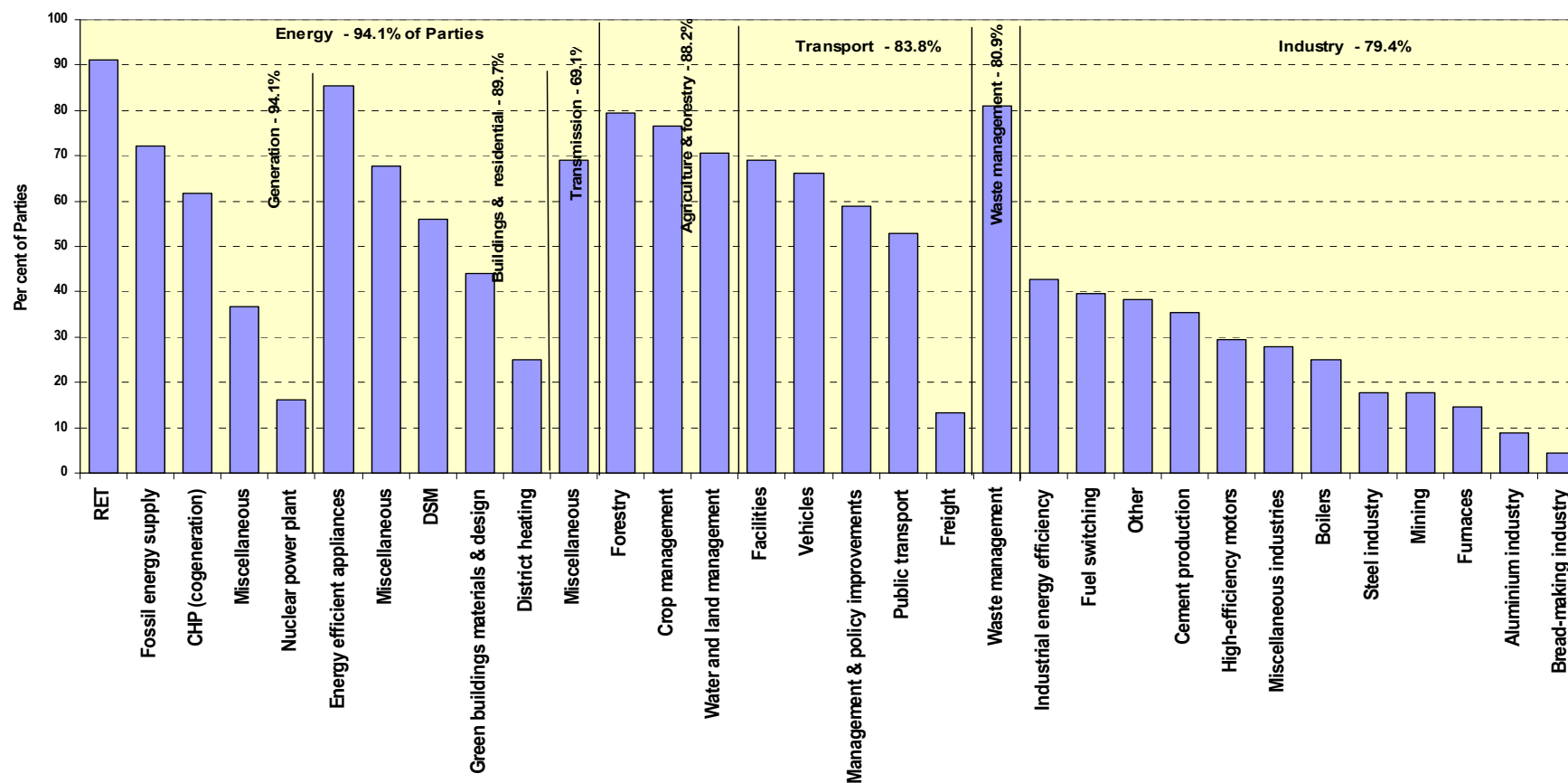
# Sectors and technologies commonly considered in relation to adaptation

Most commonly identified technology needs for adaptation were crop management technologies, efficient water use, improving irrigation systems , and early warning systems for forest fires;
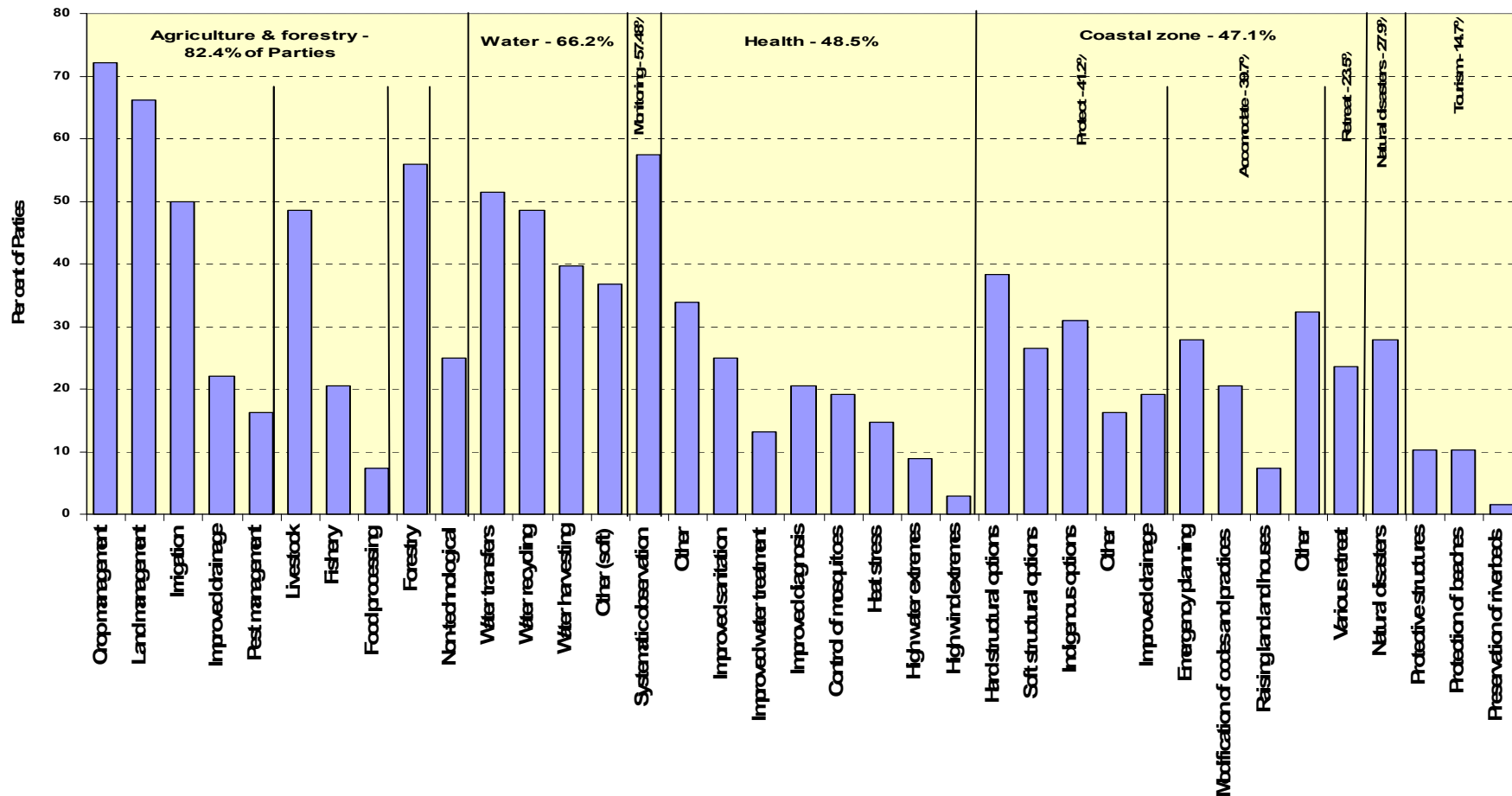
Barriers to technology transfer

The main barriers to technology transfer were economic and market barriers, followed by human capacity, information and awareness, institutional, policy related and regulatory barriers;
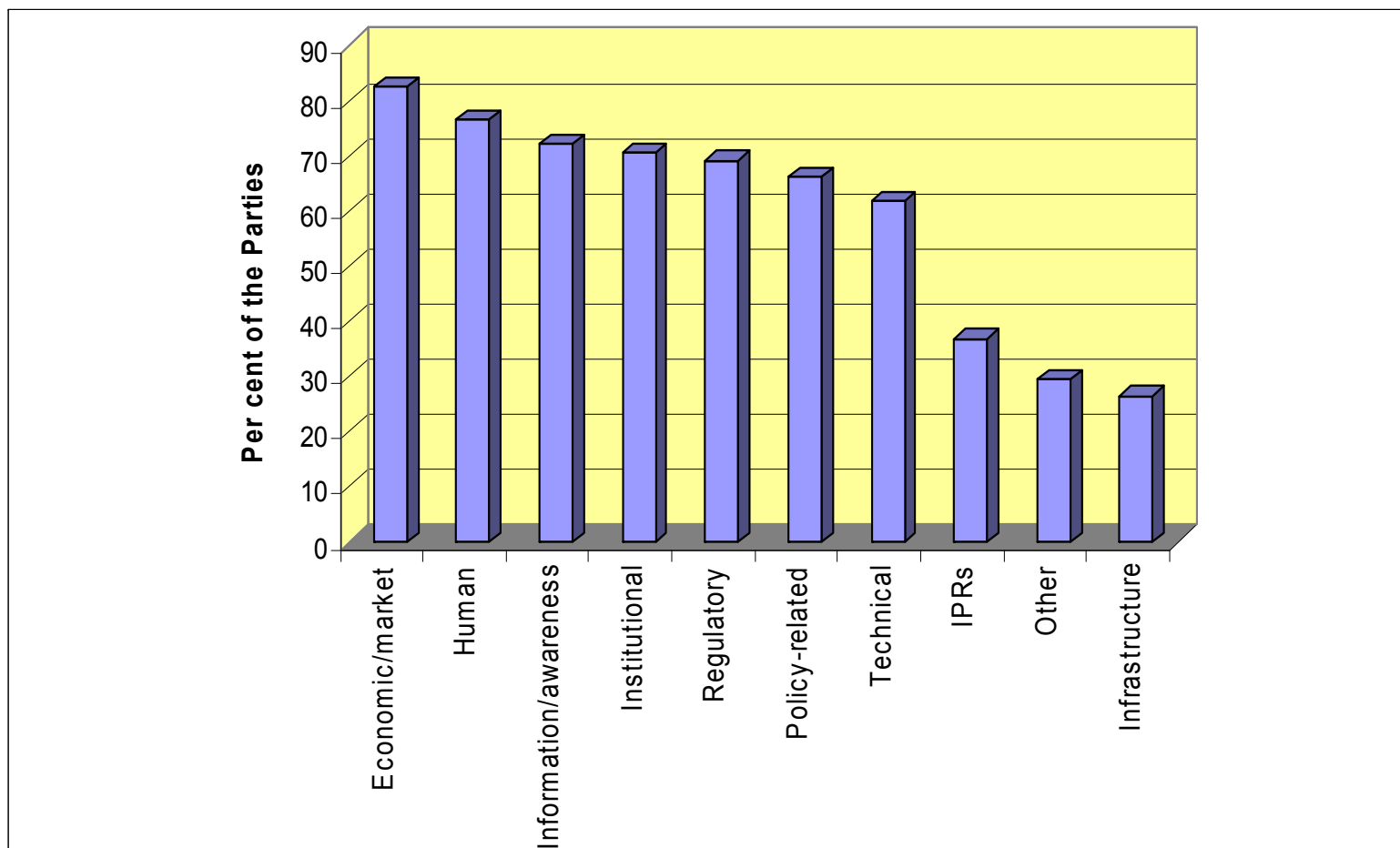
The measures to address barriers

The measures to address these barriers were regulatory and policy related, information and awareness, improving the economic situation, obtaining support from international financial institutions;
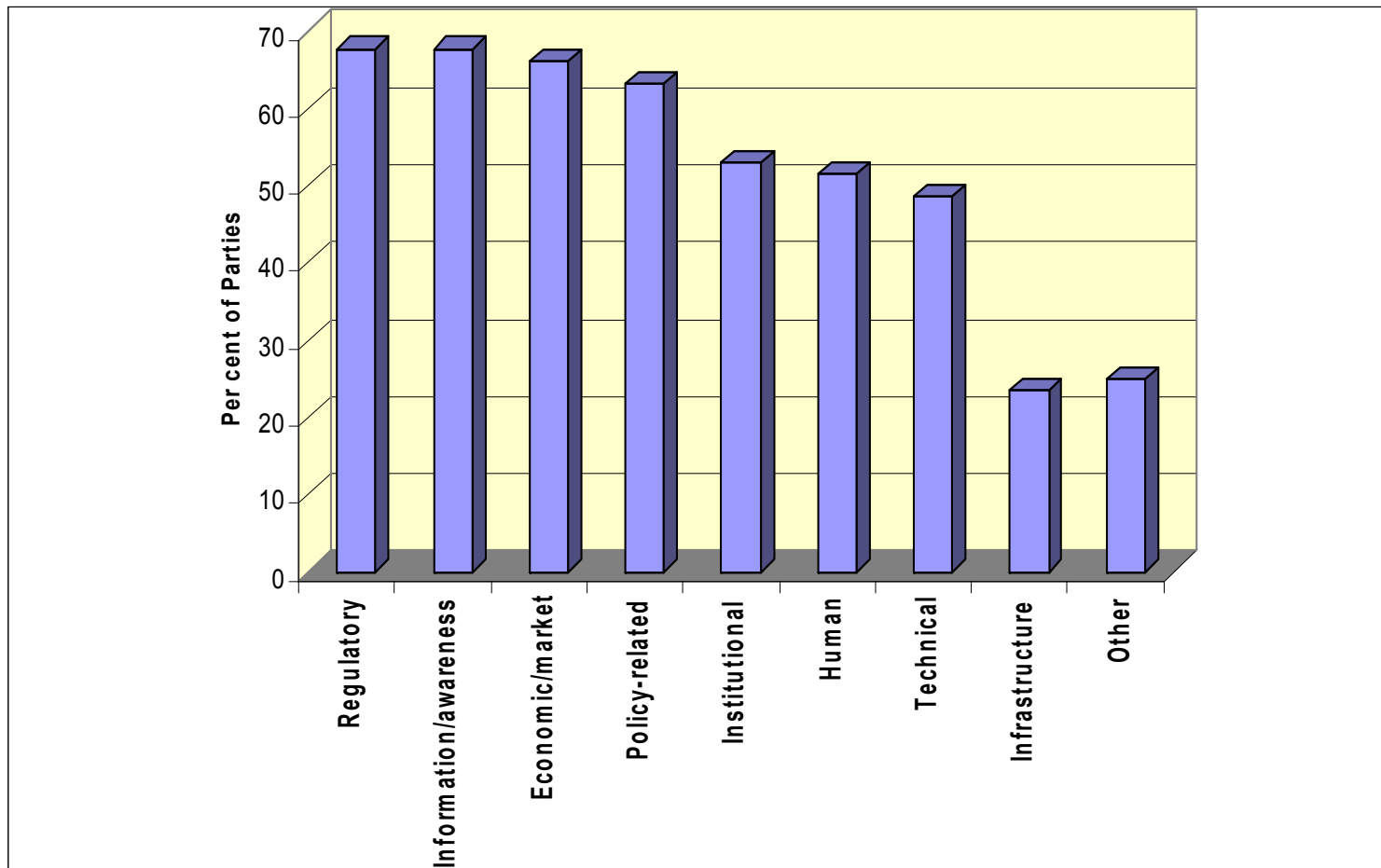
Regional analysis

The submissions of TNAs are covering the **following regions** and Parties:

- **Africa** - Benin, Botswana, Burkina Faso, Burundi, Cape Verde, Chad, Comoros, Cote d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Namibia, Niger, Republic of Congo, Senegal, Seychelles, Tanzania, Togo, Tunisia, Uganda, Zimbabwe; (30)

- **Asia and the Pacific** - Bhutan, Cambodia, China, Indonesia, Islamic Republic of Iran, Jordan, Lao People's Democratic Republic, Lebanon, Niue, Philippines, Samoa, Sri Lanka, Thailand, Viet Nam; (14)

- **Europe and CIS** - Albania, Armenia, Azerbaijan, Georgia, Malta, Republic of Moldova, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Uzbekistan; (10)

- **Latin America and the Caribbean** - Antigua and Barbuda, Bolivia, Chile, Colombia, Dominica, Dominican Republic, Ecuador, El Salvador, Guyana, Haiti, Jamaica, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia; (15)
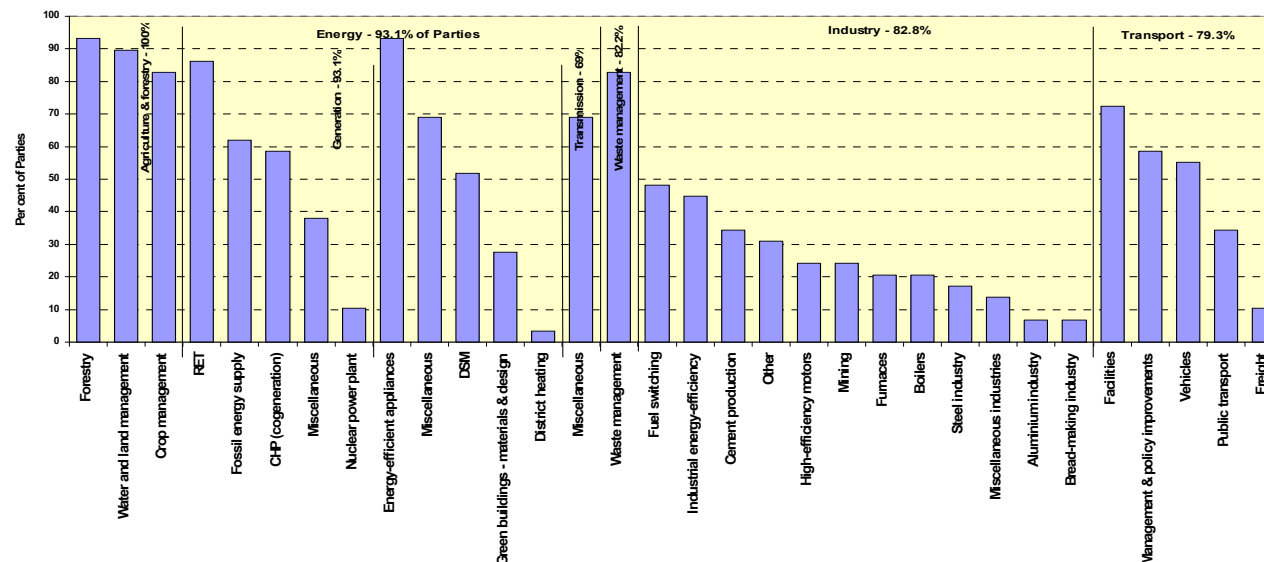
Groups: (LDCs, SIDS, DC, EIT)

Regional analysis – sectors and technologies related to mitigation

African Parties addressed technology needs in **agriculture, forestry and land use** sectors, followed by the **energy sector** (including increasing of the use of RET, electrification of rural areas), **waste management, industry and transport** as their main priority.


Parties from **Latin America and the Caribbean** identified their technology needs mostly in the **energy sector**. They identified the need to foster **clean energy technologies**, such as RET, **lower carbon fuels** and **high efficiency power generation**.
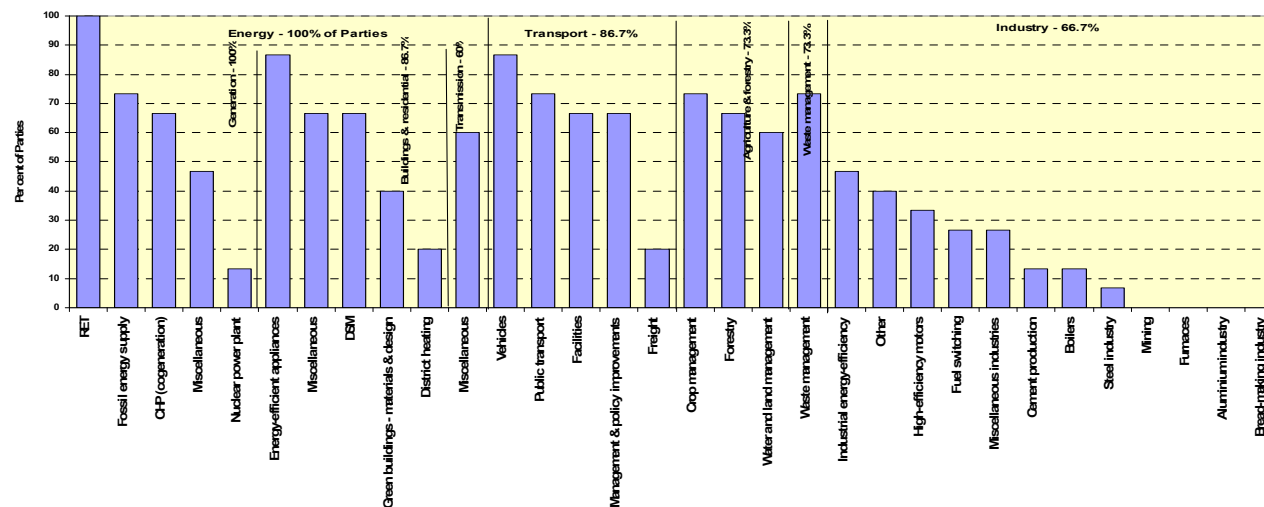
Regional analysis – sectors and technologies related to adaptation

Majority of the **LDCs** addressed adaptation technology needs for modernization of the **agriculture and forestry** sectors. LDCs also identified water related needs, such as **water transfers, recycling and conservation**, and technologies for **systematic observat. and monitoring, health** and **coastal zone** as the most appropriate.
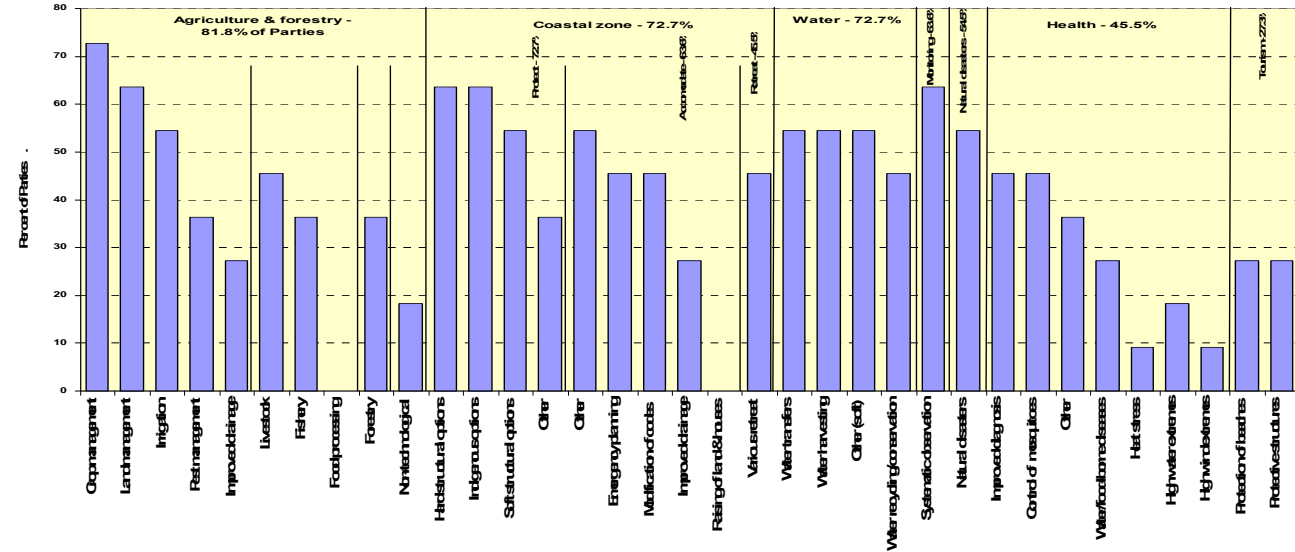
Many new ESTs relevant to the sustainable development of **SIDS** are now becoming available. Some SIDS identified **agriculture, coastal zone,** and **water management** as their main adaptation related sectors. **Crop and land management technologies, systematic observation and monitoring technologies** were considered key to successfully deal with natural disasters.
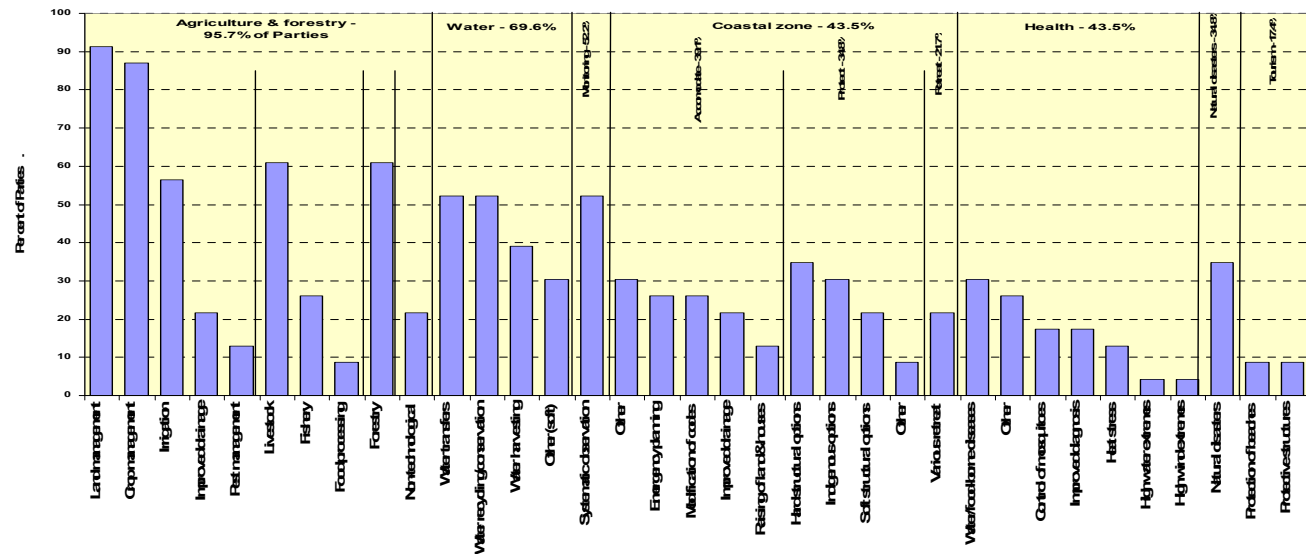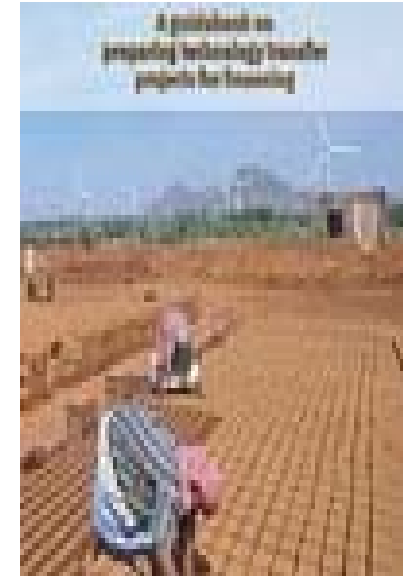
Regional analysis – capacity building needs

- Many TNAs delivered from **African Parties** indicated a strong need for the support for capacity-building, reporting large potential to improve institutions and infrastructure, and to develop training and human capacity;

- According to some Parties the capacity-building needs in the **Asia**n region should focus on building of institutional capacities to support transfer of ESTs, further encouragement of the innovation process, and building targeted technical and scientific skills to utilise its potential for development of indigenous technologies;

- As reported by some **Latin American and Caribbean Parties** in their TNAs, it is critical to address the building of capacity for effective communication and technology understanding, and improve the networking with regional and international scientific groups;

- According to some TNAs, capacity-building in the **Europe and CIS** should be more focused on the dissemination of information on available funding opportunities at the national and European levels, efficient energy consumption, availability of information on energy efficiency and RET, the dissemination of success stories on additional benefits of utilization of ESTs;
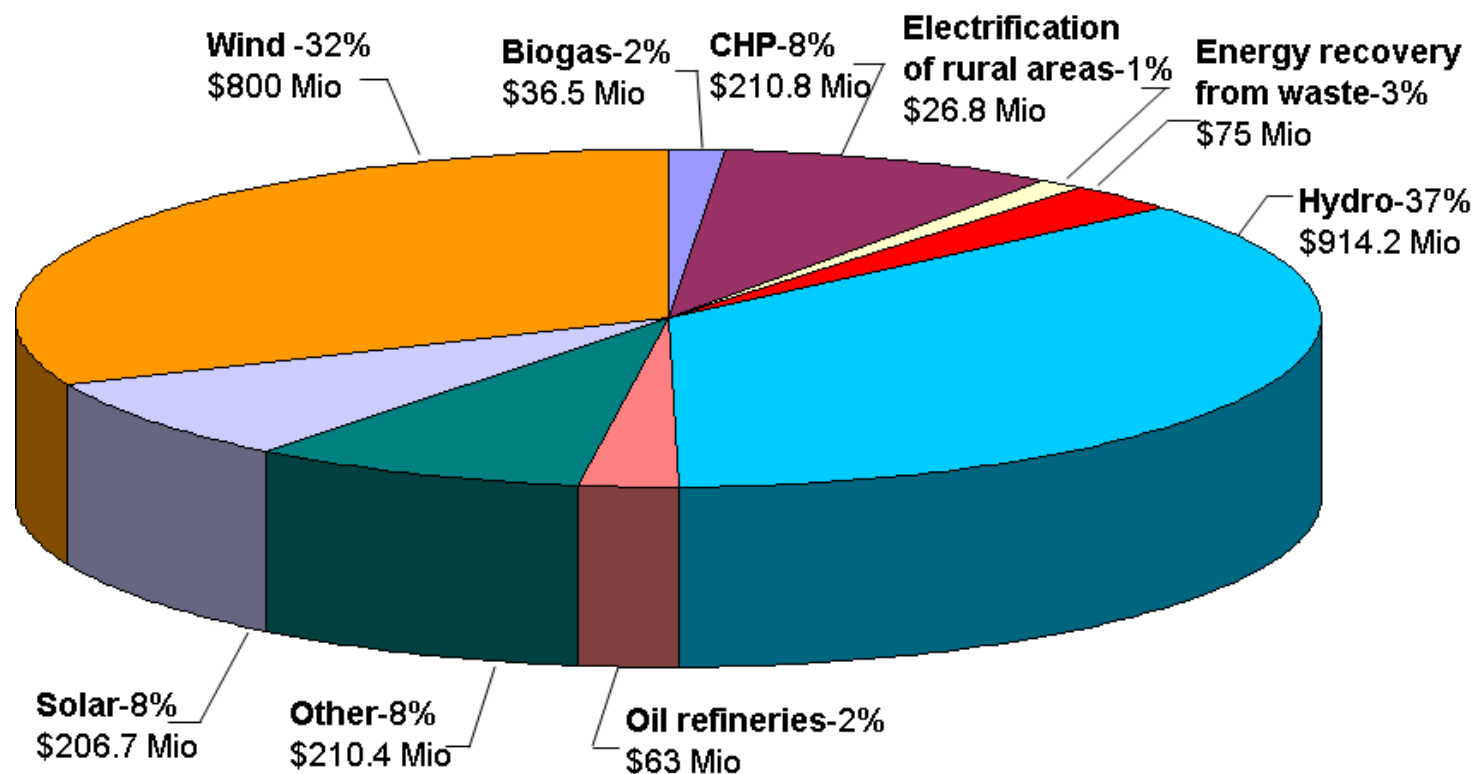
Need to **implement the TNA results**

- The delivered TNAs has proved that they might be an effective tool for decision makers involved in the facilitation of the technology transfer process;

- The TNA process not only helps identify specific technology needs, but also points out the direction in which, for example, the future policies and regulations will need to progress;

- To meet national objectives to combat CC and to meet UNFCCC objective of implementing technology transfer framework TNA results should be translated into applications;

- A guidebook on preparing technology transfer projects for financing was developed to assist in the implementation of the TNA results. This guidebook is available in several languages and it is currently supported by the **ongoing regional training workshops for project developers** (Botswana, 19-21 August 2009);

Projects proposed within TNA reports:
Energy production

Wind -32% $800 Mio

Biogas-2% $36.5 Mio

CHP-8% $210.8 Mio

Electrification of rural areas-1% $26.8 Mio

Energy recovery from waste-3% $75 Mio

Hydro-37% $914.2 Mio

Solar-8% $206.7 Mio

Other-8% $210.4 Mio

Oil refineries-2% $63 Mio

Examples of the proposed projects:
Development of hydropower plant for national use and export of electricity.
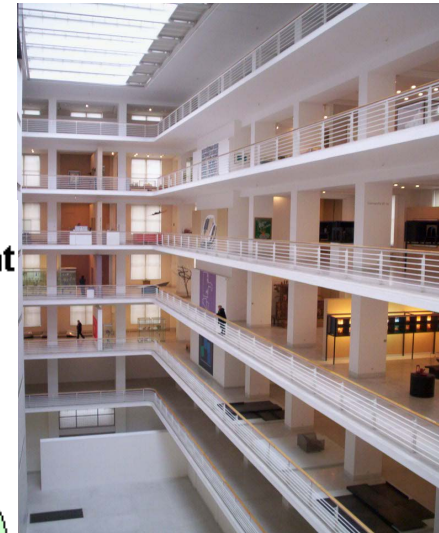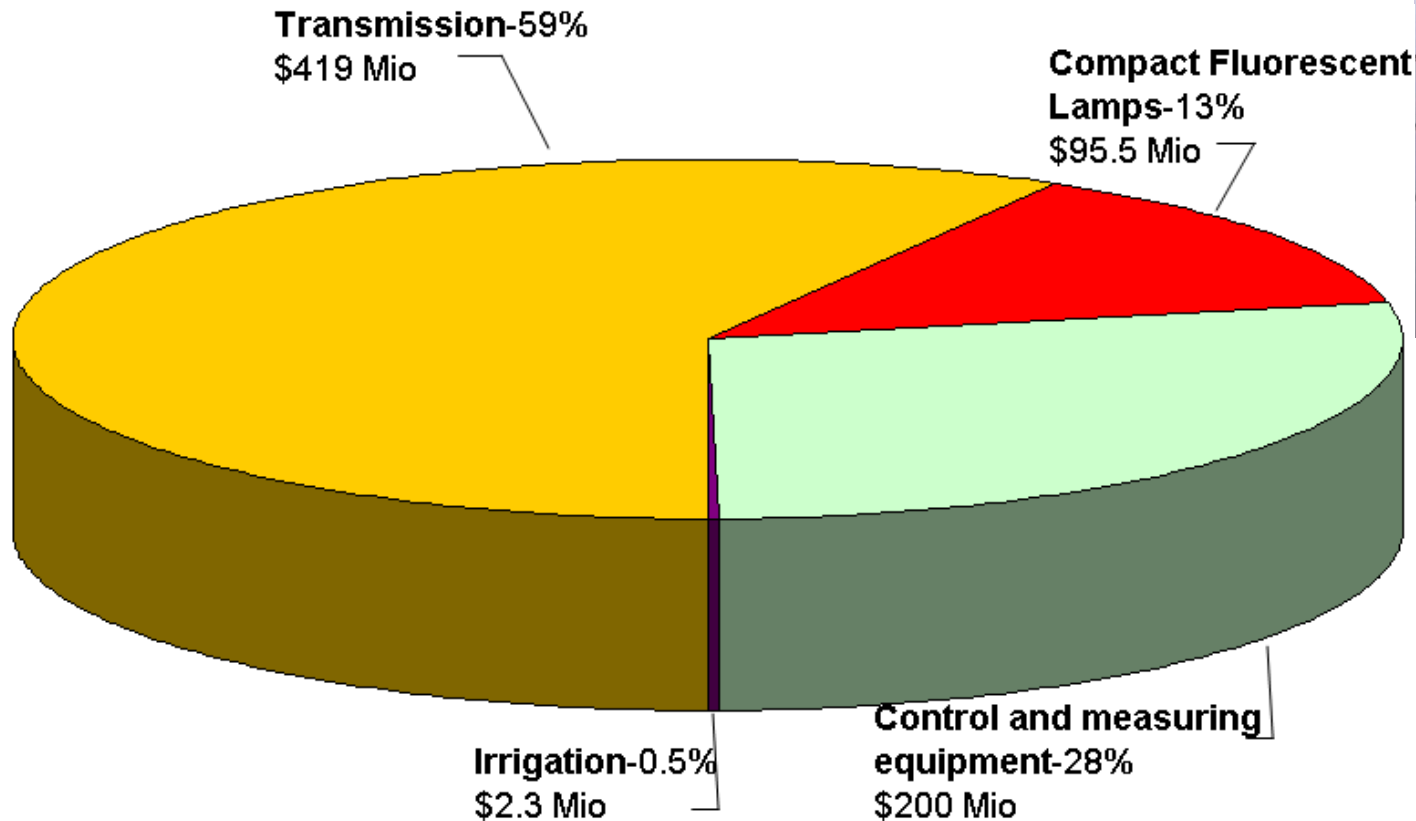Off-grid solar electrification program to electrify rural households.
Bio-diesel production for the transport sector.
Diffusion of solar heaters, by emergence of a local industrial manufacturing.

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Projects proposed within TNA reports:

Energy consumption

Transmission-59%
$419 Mio

Compact Fluorescent Lamps-13%
$95.5 Mio

Control and measuring equipment-28%
$200 Mio

Irrigation-0.5%
$2.3 Mio
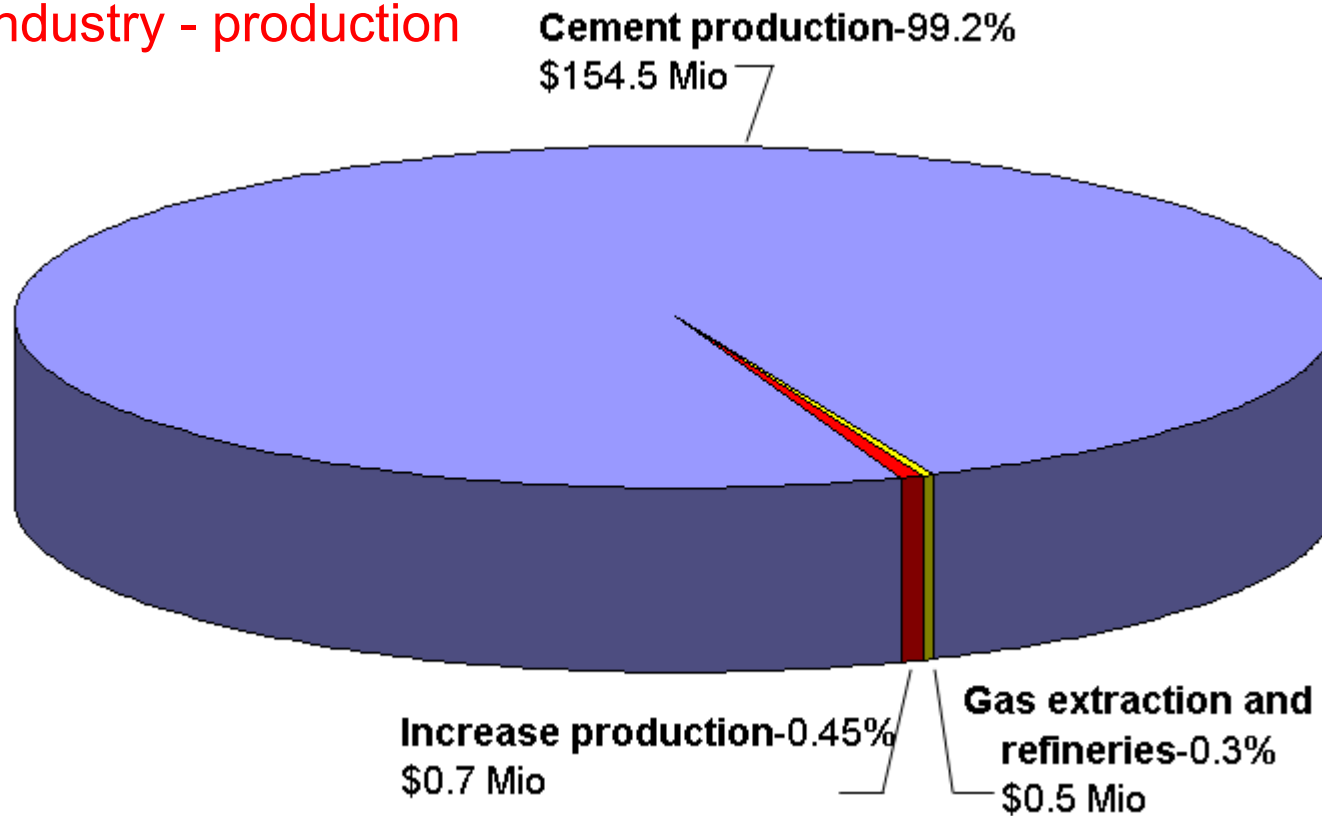
Examples of the proposed projects:

Deployment of energy-efficient lighting to reduce energy consumption using energy efficient bulbs in municipalities.

Implementation of enhanced quality solar cookers.

Projects proposed within TNA reports:

Industry - production

Cement production-99.2%
$154.5 Mio

Increase production-0.45%
$0.7 Mio

Gas extraction and refineries-0.3%
$0.5 Mio

Examples of the proposed projects:

Use of additional raw blending materials such as pulverized fly ash or slag to replace traditional raw materials such as clay in cement kilns with objective to reduce carbon dioxide emissions.

Increase production capacity of Compact Fluorescent Lamps, with unchanged energy intensity thanks to innovative production technologies.

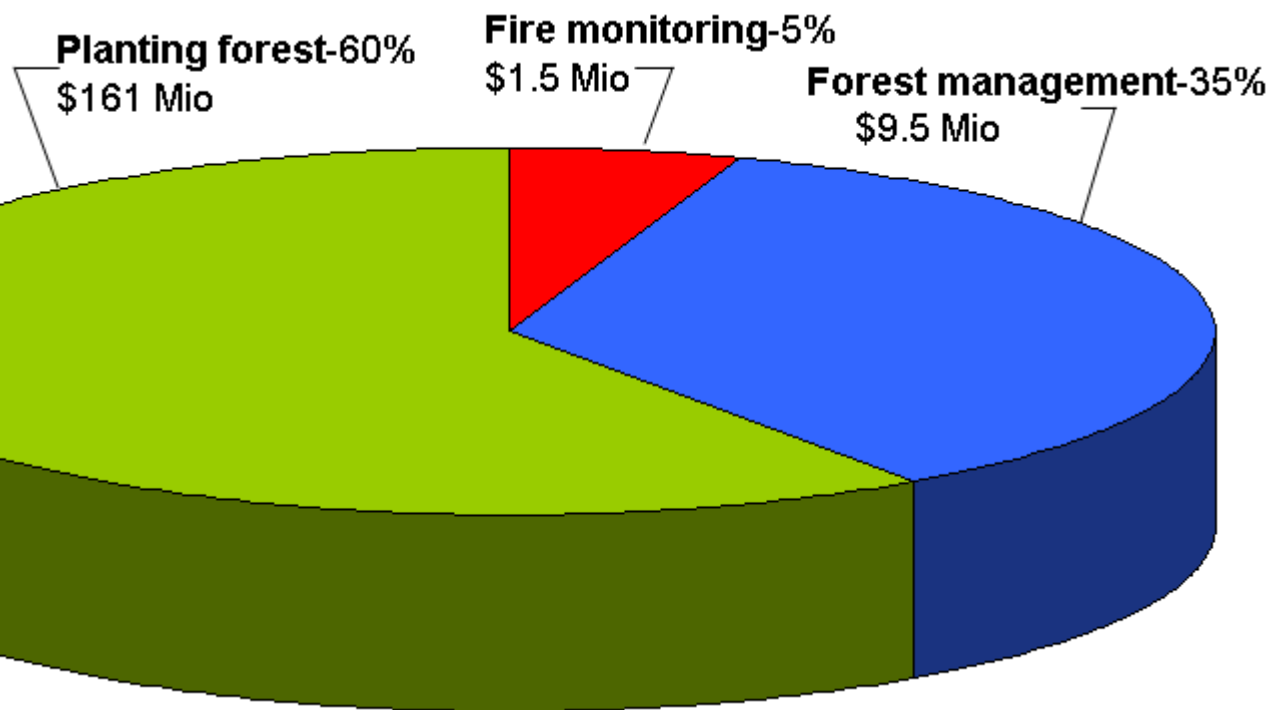# rojects proposed within TNA reports:

dustry - efficiency

Oil refineries-73%
$120 Mio

Improve efficiency-27%
$45.3 Mio
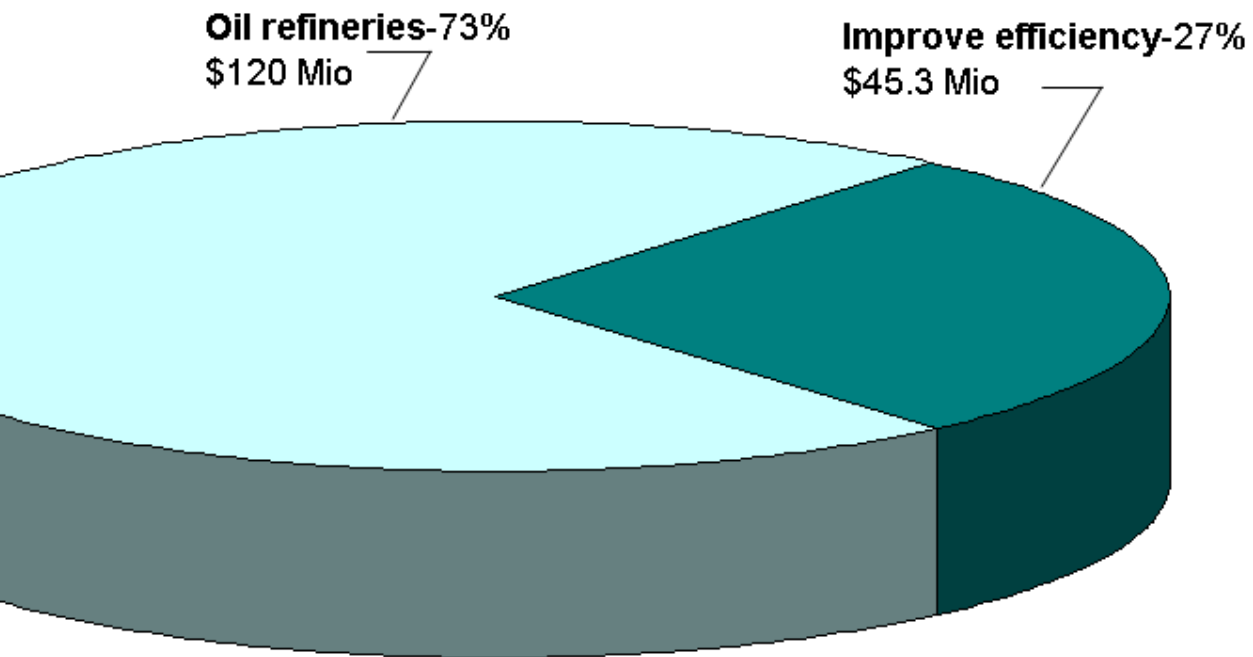
nples of the proposed projects:

vation of a thermal power plant in the mining sector, replacement of
rators with high efficient technology.

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ects proposed within TNA reports:

stry

Planting forest-60%
$161 Mio

Fire monitoring-5%
$1.5 Mio

Forest management-35%
$9.5 Mio

mples of the proposed projects:
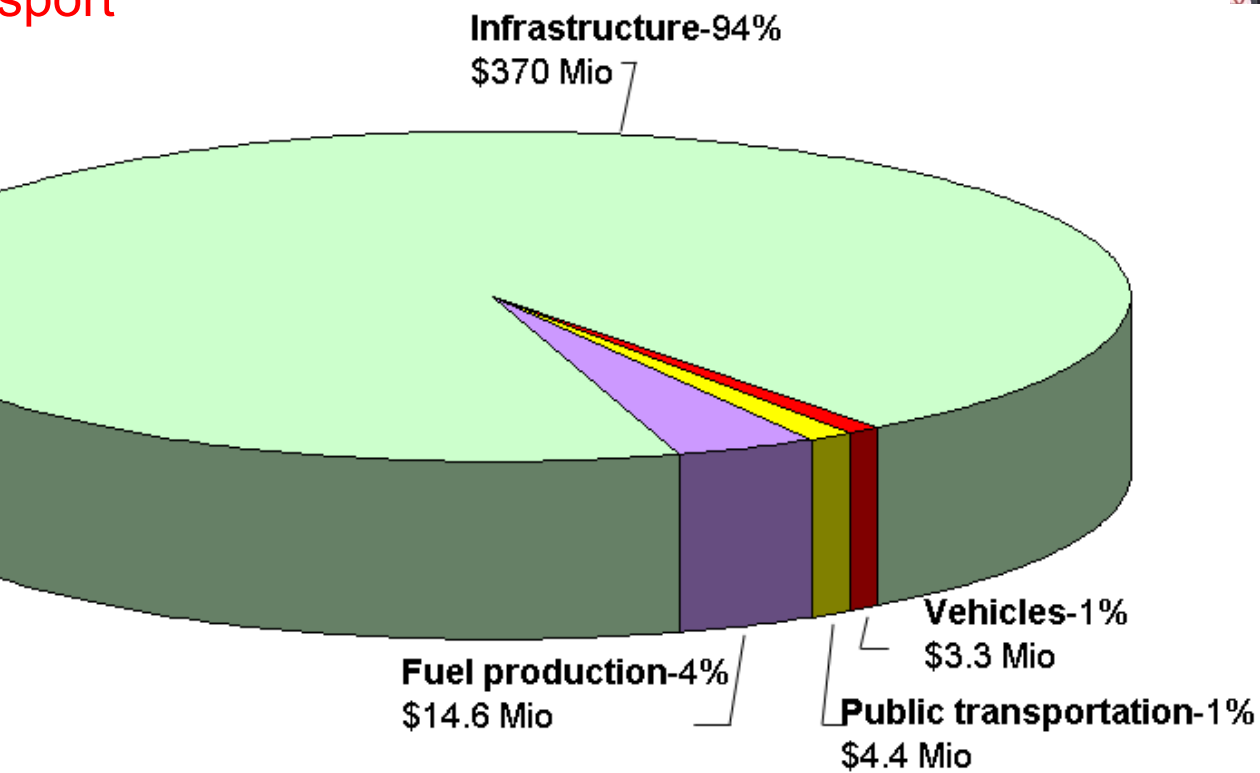asing CO2 sequestration capacity by aforestation of river basins and
ded land plots.
lation of fire monitoring facilities to assess the more threatened forest

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jects proposed within TNA reports:
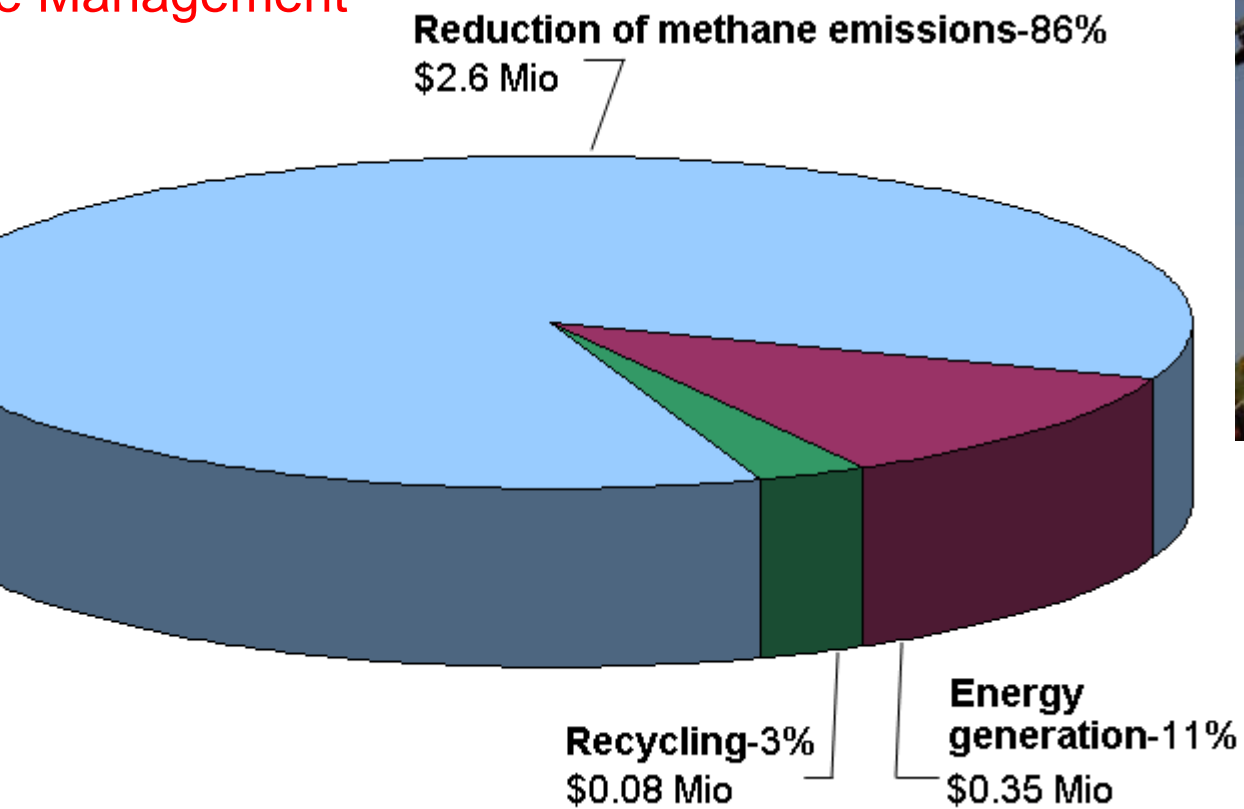
sport

Infrastructure-94%
$370 Mio

Fuel production-4%
$14.6 Mio

Public transportation-1%
$4.4 Mio

Vehicles-1%
$3.3 Mio

mples of the proposed projects:

lation of innovative technologies on the national rail grid.

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ects proposed within TNA reports:

e Management

Reduction of methane emissions-86%
$2.6 Mio

Recycling-3%
$0.08 Mio
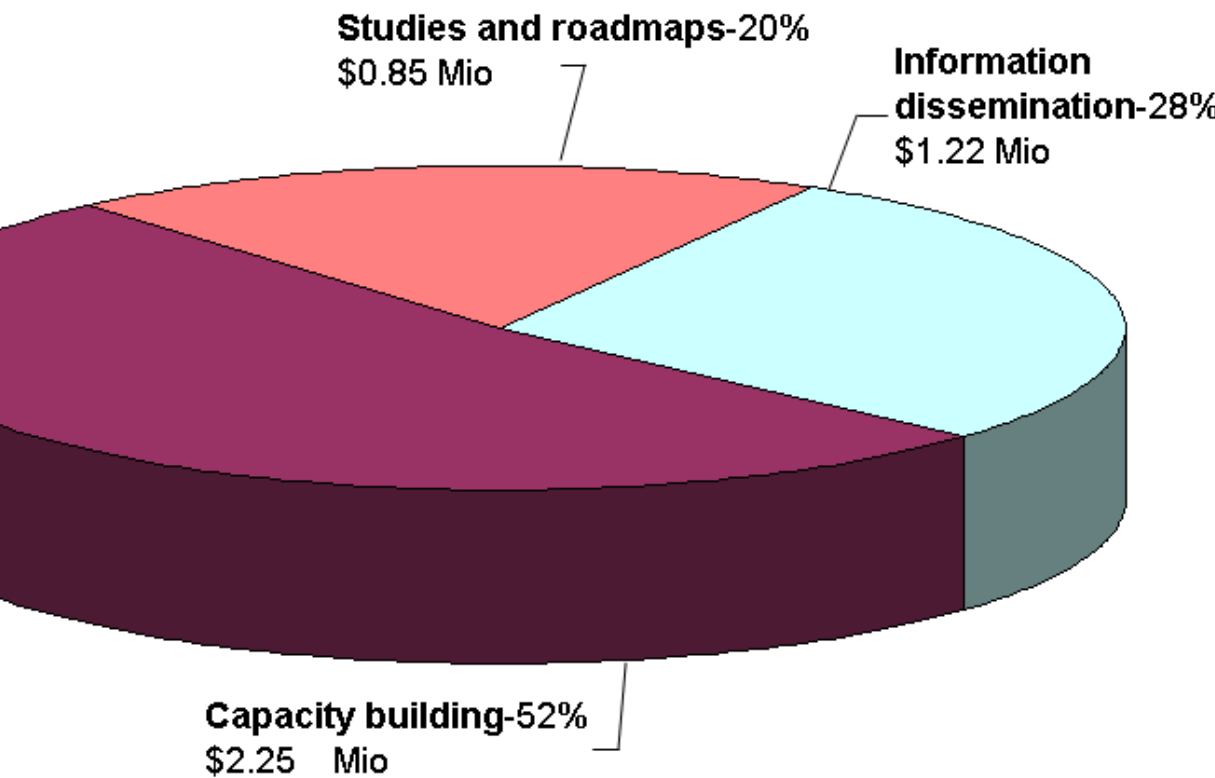
Energy
generation-11%
$0.35 Mio

mples of the proposed projects:

lopment program for power generation from bio-fuel produced from

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ects proposed within TNA reports:

mation & Awareness

Studies and roadmaps-20%
$0.85 Mio

Information dissemination-28%
$1.22 Mio

Capacity building-52%
$2.25   Mio

g awareness on environmental modes of transport – education of
s and carrier staff.

then knowledge of national stakeholders on various aspects and

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Thank you for your attention